

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

Applicant(s): Venkat Selvamanickam, et al.

Title: METALORGANIC CHEMICAL VAPOR DEPOSITION (MOCVD)  
PROCESS AND APPARATUS TO PRODUCE MULTI-LAYER HIGH-  
TEMPERATURE SUPERCONDUCTING (HTS) COATED TAPE

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Examiner: Aaron Austin      Group Art Unit: 1775

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Mail Stop Appeal Brief - Patents  
The Board of Patent Appeal and Interferences  
Commissioner for Patents  
PO Box 1450  
Alexandria, VA 22313-1450

**REPLY BRIEF**

David A. Schell, Reg. No. 60,484  
Agent for Appellant  
LARSON NEWMAN ABEL  
POLANSKY & WHITE, LLP  
(512) 439-7100 (phone)  
(512) 439-7199 (fax)

This brief contains these items under the following headings, and in the order set forth below (37 C.F.R. § 41.37(c)(1)):

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The final page of this brief bears the representative's signature.

I. STATUS OF CLAIMS (37 C.F.R. § 41.37(c)(1)(iii))

Claims 23-34 and 36-43, all of which are rejected and remain pending herein.

Claims 1-22 and 35 were canceled. Each of claims 23-34 and 36-43 is hereby appealed by Appellants.

II. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL (37 C.F.R. § 41.37(c)(1)(vi))

A. Appellants respectfully request review of the rejection of claims 23-34 and 36-43 under 35 U.S.C. § 103(a) over US Pub. 2005/0173679 (hereinafter “Mannhart”).

### III. REPLY TO EXAMINER'S ARGUMENTS

The claimed invention is drawn to a superconductive article that comprises a plurality of individually identifiable superconductive films of the same material being atomically bonded to each other, and free of intervening bonding layers. For the films to be individually identifiable, an interface exists between the layers. Mannhart teaches that grain boundaries reduce the flow of electrons and reduce the critical current of the superconductive film. See Mannhart at paragraph 0002. Accordingly, if one of ordinary skill in the art would have tried to limit the formation of grain boundaries in the superconductive layer when forming the layer using a MOCVD deposition, one of ordinary skill in the art would have performed the MOCVD process to achieve an epitaxial growth of depositing material on an existing layer to reduce the likelihood of grain boundaries between the layers. Using MOCVD, the crystal grains of the existing layer would have been extended using the epitaxial growth with no perceptible interface, and therefore, the films would not have been individually identifiable. In contrast, the Appellants' process produces a superconductive article that includes individually identifiable layers of the same material. Due to the individually identifiable layers, one of ordinary skill in the art would have predicted that the critical current of the superconductive article would be lower due to potential formation of grain boundaries. Clearly, such a reduction in critical current is undesired. The examiner provides no reasonable expectation of success, and based on the art of record, Applicants respectfully submit that one of ordinary skill in the art would have predicted that there is not a reasonable likelihood of success when individually identifiable layers of the same material would have been present.

Further, mechanically pressing two surfaces together does not induce atomic bonding. As previously discussed, Van der Waals interactions are generally not considered atomic bonding. Further, covalent bonds are formed as a result of chemical reactions, not by bringing two surfaces together by mechanical means. The Examiner alleges that, "the proximity of the layers and interaction due to the mechanical pressure is expected to produce covalent bonds." The Examiner has provided no evidence in the record to support this allegation, which was first presented in the Examiner's Answer.

Thus, Mannhart fails to teach, suggest, or provide proper motivation for a superconductive layer comprising at least three superconductive films of the same material being disposed one atop another, atomically bonded to each other, and free of intervening bonding layers between superconductive films. As such, the USPTO has failed to make a *prima facie* case of obviousness at least in part because Mannhart fails to teach, suggest, or provide proper motivation for each and every element of the claims.

#### IV. CONCLUSION

For at least the foregoing reasons, Appellants respectfully request the Board to reverse the grounds for rejection that are the subject to appeal.

Respectfully submitted,

Date

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David A. Schell, Reg. No. 60,484  
Agent for Appellant  
LARSON NEWMAN ABEL &  
POLANSKY, LLP  
5914 West Courtyard Drive, Suite 200  
Austin, TX 78730  
(512) 439-7100 (phone)  
(512) 439-7199 (fax)